UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/679,154	SIMSKE ET AL.
	Examiner	**Art Unit**	
	James H. Blackwell	2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 July 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48 and 50-65* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-48 and 50-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 October 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This Office Action is in response to an amendment filed 07/27/2007.

2.   The priority date is **10/03/2003**.

3.   Claims 1-48, and 50-65 are currently pending.

4.   Claims 1, 22, and 48 are independent claims.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1, 2, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yanikoglu et al. (hereinafter Yanikoglu, "Pink Panther: A Complete Environment

For Ground-Truthing and Benchmarking Document Page Segmentation", in Pattern

Recognition, Vol. 31, No. 9, pp. 1191-1204, (c) 1998) in·view of Huang et al. (hereinafter

Huang, U.S. Patent Application Publication No. 2003/0053183 A1 filed 09/20/2001,

published 03/20/2003).

In regard to independent Claim 1, Yanikoglu discloses:

Note: for purposes of examination, the definition step is assumed to be either

manual or automatic.

- *a definition of at least one region in an image, the region definition having a*

  location specification and a type specification (Pg. 1194, Sec. 3.2 → allows a

user to view a document image and draw zones of various types around the

different page regions, using simple mouse clicks, thereby defining regions in the

image; after drawing the zone, one can label it with its type, subtype, parent

zone, attached zones, and any number of attributes; Fig. 1 discloses position and

type specifications associated with the zones and the image as a whole in the.

output RDIFF file);

- *displaying the boundaries of the at least one defined region according to its type*
  specification (Pg. 1194-1195, Sec. 3.2 → after drawing a zone, one can label it

  with its type, subtype, parent zone, attached zones, and any number of

  attributes. Also see screen snapshot in Pg. 1196, Fig. 3).

- *generating an image layout definition comprising the region definition and the*
  visible area definition (Pg. 1195, Sec. 3.2 → image layout definition is created in

  RDIFF format).

Yanikoglu fails to disclose:

- *receiving a user-specified definition of a visible area in the image, the visible area*
  definition having a specification of margins around the image;

However, Huang discloses *receiving a user-specified definition of a visible area*

in the image, the visible area definition having a specification of margins around the

image (at least Pg. 1, Paragraph [0017] → allows the user to define a region or

regions on a preview image produced by a scanner. This region or regions are then

subsequently scanned to produce a final image or images). It is further noted that

such a feature was well known to those of ordinary skill in the art at the time of

invention since practically every scanning software contains in its user interface a

means to choose a scanning area.

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu and Huang since both inventions

are related to the scanning or digitizing of documents. Adding the disclosure of

Huang provides the benefit of saving time since one need not always scan the entire

page to capture only certain portions.

In regard to dependent Claim 2, Yanikoglu discloses:

- *displaying the image on a display* (see Pg. 1196, Fig. 3 → screen snapshot of
  GroundsKeeper with image with drawn zones. Each zone is given a unique
  identifying number, displayed on the screen).

In regard to independent Claim 48, Claim 48 merely recites a system for

executing the method of Claim 1. Thus, the combination of Yanikoglu and Huang

disclose every limitation of Claim 48, as recited in the above rejection for Claim 1.

7.   Claims 3, 11, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yanikoglu in view of Huang, and in further view of Revankar et al. (hereinafter

Revankar, U.S. Patent No. 5,767,978 filed 01/21/1997, issued 06/16/1998).

In regard to dependent Claim 3, Yanikoglu and Huang fail to disclose:

Note: The Specification defines a modality as a description of a region as to

whether it is *black-and-white, gray scale, or color layout element, which also*

specifies the bit depth of the region.

- *receiving a definition of at least one region in an image further comprises*

  receiving a modality specification.

However, Revankar discloses *receiving a definition of at least one region in an*

image further comprises receiving a modality specification (Abstract → image

segmentation according to classes of regions that may be rendered according to the

same imaging techniques. Image regions may be rendered according to a three-

class system (such as traditional text, graphic and picture systems), or according to

more than three image classes. In addition, only two image classes may be required

to render high quality draft or final output images. The image characteristics that

may be rendered differently from class to class may include half toning, colorization

and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu, Huang, and Revankar as all three

inventions relate to image analysis. Adding the disclosure of <u>Revankar</u> provides the

benefit of recognizing region types by class and by modality (color, bit depth, etc.).

It is noted that <u>Yanikoglu</u> may disclose this limitation (Pg. 1196, Fig. 3 →

suggests that zones are characterized by modality (Box at bottom of screen dump

shows Zone6 with adjacent label as Halftone). Also, <u>Yanikoglu</u> discusses the prior

art (Pg. 1191) and suggests that also describing a modality for a zone was

performed. However, there does not appear to be enough of a description of

GroundsKeeper in <u>Yanikoglu</u> to determine this.

In regard to dependent Claim 11, <u>Yanikoglu</u> fails to expressly disclose:

- *receiving a definition of a visible area in the image comprises*

    o *receiving a user input indicative of a first vertex and a location of a second*

      vertex opposite the first vertex of the visible area on the image.

However, <u>Revankar</u> discloses *receiving a user input indicative of a first vertex*

and a location of a second vertex opposite the first vertex of the visible area on the

image (Abstract → image segmentation according to classes of regions that may be

rendered according to the same imaging techniques. Image regions may be

rendered according to a three-class system (such as traditional text, graphic and

picture systems), or according to more than three image classes. In addition, only

two image classes may be required to render high quality draft or final output

images. The image characteristics that may be rendered differently from class to

class may include half toning, colorization and other image attributes).

It is noted that Huang also allows for a user to select a visible region or regions and very likely does this using a mouse defining a rectangle by dragging it over the region(s) of interest.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu and Revankar as both inventions relate to image segmentation. Adding the disclosure of Revankar provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

In regard to dependent Claim 57, Claim 57 merely recites a system for executing the method of Claim 11. Thus, the combination of Yanikoglu in view of Huang and Revankar discloses every limitation of Claim 57, as indicated in the above rejection for Claim 11.

8.   Claims 4, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Huang, and in further view of Hall Jr. et al. (hereinafter Hall, U.S. Patent No. 6,768,816 filed 06/13/2002, issued 07/27/2004).

In regard to dependent Claim 4, Yanikoglu fails to expressly disclose:

Note: it is not clear from Yanikoglu (in describing GroundsKeeper) whether or not automatic segmentation analysis is possible in GroundsKeeper, but the reference suggests that GroundsKeeper requires user interaction in defining zones.

*   *automatically determining the definition of the at least one region in the image by segmentation analysis of the image.*

However, Hall discloses *automatically determining the definition of the at least one region in the image by segmentation analysis of the image* (see Fig. 4 → represents a display of a document for which automatic segmentation has been performed).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, and Hall as all three inventions are related to image segmentation and layout analysis. Adding the disclosure of Hall provides the benefit of an initial guess as to how the image should be segmented.

In regard to dependent Claim 50, Claim 50 merely recites a system for executing the method of Claim 4. Thus, the combination of Yanikoglu in view of Huang and Hall discloses every limitation of Claim 50, as indicated in the above rejection for Claim 4.

9.   Claims 5, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Huang, and in further view of Sakai et al. (hereinafter Sakai, U.S. Patent No. 6,735,740 filed 03/04/1998, issued 05/11/2004).

In regard to dependent Claim 5, Yanikoglu fails to expressly disclose:

- *receiving a definition of at least one region in the image comprises*

    o *automatically determining the definition of the at least one region in the image by classification analysis of the image.*

However, <u>Sakai</u> discloses *automatically determining the definition of the at least one region in the image by classification analysis of the image* (Figs. 10A-C → depict progressive classification of image regions based on type).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Huang</u>, and <u>Sakai</u> as all three inventions relate to document image analysis. Adding the disclosure of <u>Sakai</u> provides the benefit of partitioning an image based on types of content identified in the image

In regard to dependent Claim 51, Claim 51 merely recites a system for executing the method of Claim 5. Thus, the combination of <u>Yanikoglu</u> in view of <u>Huang</u> and <u>Sakai</u> discloses every limitation of Claim 51, as indicated in the above rejection for Claim 5.

10.   Claims 6, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Huang, and in further view of Ohta (U.S. Patent No. 6,163,623 filed 07/26/1995, issued 12/19/2000).

In regard to dependent Claim 6, <u>Yanikoglu</u> fails to expressly disclose:

Note: interpreted as essentially user designation of a point in the document image and the method computing a region about the point.

- *receiving a definition of at least one region in the image comprises:*
    - o *receiving a user input indicative of a point on the image; and*

- o *defining a region encompassing the point using segmentation and classification analyses of the image.*

However, Ohta discloses *receiving a user input indicative of a point on the image; and defining a region encompassing the point using segmentation and classification analyses of the image* (Col. 7, line 46 through Col. 8, line 2 → scanning a documents, rendering it to a touch display, and allowing the user to manually select a region or regions to further process; the drawing of a box is done automatically based on the user input).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, and Ohta as all three inventions relate to document analysis. Adding the disclosure of Ohta provides the user with a means to easily designate zones without the need to manually draw on the screen.

In regard to dependent Claim 52, Claim 52 merely recites a system for executing the method of Claim 6. Thus, the combination of Yanikoglu in view of Huang and Sakai discloses every limitation of Claim 52, as indicated in the above rejection for Claim 6.

11.   Claims 7, 15, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yanikoglu in view of Huang, and in further view of Rangarajan (U.S. Patent No.

5,822,454 filed 04/10/1995, issued 10/13/1998).

In regard to dependent Claim 7, Yanikoglu fails to expressly disclose:

- *receiving a definition of at least one region in the image comprises:*

   o *receiving a user input indicative of boundaries of the region on the image;*

      and

   o *receiving a user input indicative of region type and region modality*

      specifications.

However, Rangarajan discloses *receiving a user input indicative of boundaries of*

the region on the image; and receiving a user input indicative of region type and

region modality specifications (Col. 9, lines 15-27; Figs. 7A-B → a conventional set

of drawing-like tools with which the user can graphically create the user defined

zones. This is done by choosing an appropriate drawing tool, such as a rectangle or

polygon creation tool, and applying it to the de-skewed image to select the individual

areas or zones containing the desired text information. Fig. 7a illustrates one

example of a suitable user interface 705, showing a de-skewed document 700. Fig.

7b illustrates the same document now including a number of user-defined zones

701. A palette of drawing tools 703 is also shown, with various graphical tools for

selecting the user-defined zones 701. Once the user defines a number of zones, the

coordinates of the boundary of each of user defined zone is stored, preferably using

the coordinates of an upper left hand corner, and a lower right hand corner where

the user defined zone is a rectangle. For general polygonal user defined zones, the coordinates of each vertex may also be stored (Col. 9, lines 15-37; Figs. 7A-B).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, and Rangarajan as all three inventions relate to document image analysis. Adding the disclosure of Rangarajan provides the benefit of manually defining image zones.

In regard to dependent Claim 15, Yanikoglu fails to expressly disclose:

- *receiving definition of at least one region comprises*
    - ○ *receiving a user specification of a location and boundaries of a region in the image.*

However, Rangarajan discloses *receiving a user specification of a location and boundaries of a region in the image* (Col. 9, lines 15-37 → inputting polygons) input of vertices to define an image region).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, and Rangarajan as all three inventions relate to document image analysis. Adding the disclosure of Rangarajan provides the benefit of manually defining image regions.

In regard to dependent Claim 53, Claim 53 merely recites a system for executing the method of Claim 7. Thus, the combination of Yanikoglu in view of Huang and

Rangarajan discloses every limitation of Claim 53, as indicated in the above

rejection for Claim 7.

12.   Claims 8-10, 17, and 54-56 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yanikoglu in view of Huang, and in further view of Rangarajan, and in

further view of Revankar.

In regard to dependent Claim 8, Yanikoglu fails to expressly disclose:

- *receiving a definition of at least one region in the image comprises:*

    o *receiving a user input indicative of vertices of the region on the image*

However, Rangarajan discloses *receiving a user input indicative of vertices of the*

region on the image (Col. 9, lines 15-37 → input of vertices to define an image

region).

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu, Huang, and Rangarajan as all

three inventions relate to document image analysis. Adding the disclosure of

Rangarajan provides the benefit of manually defining image regions.

Yanikoglu, Huang, and Rangarajan fail to expressly disclose:

    o *receiving a user input indicative of region type and region modality*

      specifications.

However, Revankar discloses *receiving a user input indicative of region type and*

region modality specifications (Abstract → image segmentation according to classes

of regions that may be rendered according to the same imaging techniques. Image

regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu, Huang, Rangarajan</u>, and <u>Revankar</u> as of these inventions relate to image analysis. Adding the disclosure of <u>Revankar</u> provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

In regard to dependent Claim 9, <u>Yanikoglu</u> fails to expressly disclose:

- *receiving a user input indicative of vertices of a polygonal region on the image.*

   However, <u>Rangarajan</u> discloses *receiving a user input indicative of vertices of a polygonal region on the image* (Col. 9, lines 15-37→ input of vertices to define an image region).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Huang</u>, and <u>Rangarajan</u> as all three inventions relate to document image analysis. Adding the disclosure of <u>Rangarajan</u> provides the benefit of manually defining image regions.

<u>Yanikoglu</u> and <u>Rangarajan</u> fail to expressly disclose:

- *receiving a user input indicative of region type and region modality specifications of the polygonal region.*

However, <u>Revankar</u> discloses *receiving a user input indicative of region type and region modality specifications of the polygonal region* (Abstract → image segmentation according to classes of regions that may be rendered according to the same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosure of <u>Yanikoglu</u>, <u>Huang</u>, <u>Rangarajan</u>, and <u>Revankar</u> as all of these inventions relate to image analysis. Adding the disclosure of <u>Revankar</u> provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

In regard to dependent Claim 10, <u>Yanikoglu</u> fails to expressly disclose:

- *receiving a user input indicative of a first vertex and a location of a second vertex opposite the first vertex of a rectangular region on the image;*

However, <u>Rangarajan</u> discloses *receiving a user input indicative of a first vertex and a location of a second vertex opposite the first vertex of a rectangular region on the image* (Col. 9, lines 15-37 → input of vertices to define an image region).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Huang</u>, and <u>Rangarajan</u> as all three inventions relate to document image analysis. Adding the disclosure of <u>Rangarajan</u> provides the benefit of manually defining image regions.

<u>Yanikoglu</u>, <u>Huang</u>, and <u>Rangarajan</u> fail to expressly disclose:

- *receiving a user input indicative of region type and region modality specifications of the rectangular region.*

However, <u>Revankar</u> discloses *receiving a user input indicative of region type and region modality specifications of the rectangular region* (Abstract → image segmentation according to classes of regions that may be rendered according to the same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, Rangarajan, and Revankar as all of these inventions relate to image segmentation. Adding the disclosure of Revankar provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

In regard to dependent Claim 17, Yanikoglu fails to expressly disclose:

* *receiving definition of at least one region comprises*

    o *receiving user specification of region type and region modality.*

    However, Revankar discloses *receiving user specification of region type and region modality* (Abstract → image segmentation according to classes of regions that may be rendered according to the same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes).

    It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, Rangarajan, and Revankar as all of these inventions relate to image analysis. Adding the

disclosure of <u>Revankar</u> provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

In regard to dependent Claims 54-56, Claims 54-56 merely recite a system for executing the method of Claims 8-10, respectively. Thus, the combination of <u>Yanikoglu</u> in view of <u>Huang</u>, <u>Rangarajan</u>, and <u>Revankar</u> discloses every limitation of Claims 54-56, as indicated in the above rejections for Claims 8-10.

13.   Claims 12-13, and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Huang, and in further view of Fredlund et al. (hereinafter Fredlund, U.S. Patent Application Publication No. 2003/0058457 filed 09/21/2001, published 03/27/2003).

In regard to dependent Claim 12, <u>Yanikoglu</u> and <u>Huang</u> fail to explicitly disclose:

- *displaying the image on a display comprises:*
    - o *receiving a user specification of a file size of the image;*
    - o *determining a bit depth of the image;*
    - o *determining dimensions of the image;*
    - o *determining a display resolution in response to the file size, bit depth, and image dimensions; and*
    - o *displaying the image on a display according to the determined display resolution.*

However, Fredlund discloses *displaying the image on a display comprises: receiving a user specification of a file size of the image; determining a bit depth of the image; determining dimensions of the image; determining a display resolution in response to the file size, bit depth, and image dimensions; and displaying the image on a display according to the determined display resolution* (Pg. 2, Paragraphs [0025, 0029], Pg. 4, Paragraphs [0042-0044] → a system wherein a user determines (specifies) the file size of an image required to produce a high quality image reproduction on a selected image-bearing product. The user indirectly does this by selecting a desired image-bearing product. The system then instructs the user's system to prepare the original image so that it is optimal for the chosen image-bearing product (i.e., it provides file size requirements). Based on this information, the image is adjusted in size and in bit depth to produce an optimal image in terms of size and resolution. The user's system then *transmits* that converted image to the server to create the chosen image-bearing product. The image-bearing products are typically hardcopy prints. The final product preview is displayed to the user (see [0042])).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, and Fredlund as all three inventions are related to the manipulation of digital images. Adding the disclosure of Fredlund provides the benefit of optimizing an image according to user-provided inputs based on a display requirement.

In regard to dependent Claim 13, Yanikoglu and Huang fail to explicitly disclose:

* *receiving a user specification of a file size of the image;*

* *determining a bit depth of the image;*

* *determining dimensions of the image;*

* *determining a display resolution in response to the file size, bit depth, and image dimensions; and*

* *transmitting the image having a resolution according to the determined display resolution.*

However, Fredlund discloses *receiving a user specification of a file size of the image; determining a bit depth of the image; determining dimensions of the image; determining a display resolution in response to the file size, bit depth, and image dimensions; and transmitting the image having a resolution according to the determined display resolution* (Pg. 2, Paragraphs [0025, 0029], Pg. 4, Paragraphs [0042-0044] → a system wherein a user determines (specifies) the file size of an image required to produce a high quality image reproduction on a selected image-bearing product. The user indirectly does this by selecting a desired image-bearing product. The system then instructs the user's system to prepare the original image so that it is optimal for the chosen image-bearing product (i.e., it provides file size requirements). Based on this information, the image is adjusted in size and in bit depth to produce an optimal image in terms of size and resolution. The user's system then *transmits* that converted image to the server to create the chosen

image-bearing product. The image-bearing products are typically hardcopy prints.

The final product preview is displayed to the user (see [0042])).

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu, Huang, and Fredlund as all three

inventions are related to the manipulation of digital images. Adding the disclosure of

Fredlund provides the benefit of optimizing an image according to user-provided

inputs based on a display requirement.

In regard to dependent Claims 58-59, Claims 58-59 merely recite a system for

executing the method of Claims 12-13, respectively. Thus, the combination of

Yanikoglu in view of Huang and Fredlund discloses every limitation of Claims 58-

59, as indicated in the above rejections for Claims 12-13.

14.   Claims 14, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yanikoglu in view of Huang, and in further view of Candy Wong et al. (hereinafter

Candy Wong, U.S. Patent Application Publication No. 2003/0067489 filed 10/15/2002,

published 04/10/2003).

In regard to dependent Claim 14, Yanikoglu and Huang fail to explicitly disclose:

- *displaying the image on a display comprises:*
    - o *determining a display resolution setting of a display screen;*
    - o *determining amount of display screen space available to display the image;*

  o *determining dimensions of the image;*

  o *determining a resolution for simultaneously displaying the entire image on*

    the display screen in response to the display resolution setting, the

    amount of display screen space available, and the dimensions of the

    image; and

  o *displaying the image on the display screen in response to the determined*

    resolution.

However, <u>Candy Wong</u> discloses determining a display resolution setting of a display screen; determining amount of display screen space available to display the image; determining dimensions of the image; determining a resolution for simultaneously displaying the entire image on the display screen in response to the display resolution setting, the amount of display screen space available, and the dimensions of the image; and displaying the image on the display screen in response to the determined resolution (Abstract, Pg. 3, Paragraph [0041] → discloses a scaleable GUI system that adjusts itself (GUI components and presumably content acted upon by the GUI such as an image) to fit within a given display screen (size, resolution, etc.) according to the settings/capabilities of the display.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Huang</u>, and <u>Candy Wong</u> as all three inventions are related to the manipulation of digital content. Adding the disclosure of <u>Candy Wong</u> provides the benefit of an adjustable user interface

that adjusts itself (dimensionally, bit depth; resolution), and content manipulated

therein based on a given screen or display's settings/capabilities.

In regard to dependent Claim 60, Claim 60 merely recites a system for

executing the method of Claim 14. Thus, the combination of Yanikoglu in view of

Huang and Candy Wond discloses every limitation of Claim 60, as indicated in

the above rejections for Claim 14.

15.   Claims 16, 20, 61, and 64 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yanikoglu in view of Huang, and in further view of Rangarajan, and in

further view of Mahoney et al. (hereinafter Mahoney, U.S. Patent No. 5,999,664 filed

11/14/1997, issued 12/07/1999).

In regard to dependent Claim 16, Yanikoglu, Huang, and Rangarajan fail to

disclose:

- *receiving definition of at least one region comprises*
  - *verifying the user-specified region location and boundaries conform to at*
    least one region management model.

However, Mahoney discloses *verifying the user-specified region location and*

boundaries conform to at least one region management model (Col. 20, lines 45-63

→ searching and identifying documents based on their makeup (structure, content,

etc.). Their system performs structural analysis at two levels. At the lower level,

specific layout formats of a document can be identified (e.g., the recipient field of a

letter or the header field of a memo). Such identification is performed herein using

features. At the higher level, the entire configuration of an input document is captured using genre models. For example, a "business letter" is a genre model of a document that can be defined in most instances by a letter-date feature, a letter-recipient feature, a letter-cc feature, and a letter-signature feature (as shown in Fig. 3). Although some models may have some features in common, such models may still be distinguishable from each other by either the presence or absence of other features. For example, a memo and a letter may have similar letter-signature features while each may have different document header features (e.g., four-memo mark and letter-recipient)).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, Rangarajan, and Mahoney as all of these inventions relate to comparing document images to models or templates of documents. Adding the disclosure of Mahoney provides the benefit of identifying documents (or regions thereof) with layout models.

In regard to dependent Claim 20, Yanikoglu, Huang, and Rangarajan fail to disclose:

- *verifying the user-specified region location and boundaries conform to at least one region management model comprises*
  - o *determining whether the user-specified region boundaries fall within the visible area.*

However, Mahoney discloses *verifying the user-specified region location and boundaries conform to at least one region management model comprises determining whether the user-specified region boundaries fall within the visible area* (Col. 20, lines 45-62 → searching and identifying documents based on their makeup (structure, content, etc.). Their system performs structural analysis at two levels. At the lower level, specific layout formats of a document can be identified (e.g., the recipient field of a letter or the header field of a memo). Such identification is performed herein using features. At the higher level, the entire configuration of an input document is captured using genre models. For example, a "business letter" is a genre model of a document that can be defined in most instances by a letter-date feature, a letter-recipient feature, a letter-cc feature, and a letter-signature feature (as shown in Fig. 3). Although some models may have some features in common, such models may still be distinguishable from each other by either the presence or absence of other features. For example, a memo and a letter may have similar letter-signature features while each may have different document header features (e.g., four-memo mark and letter-recipient)).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, Rangarajan, and Mahoney as all of these inventions relate to comparing document images to models or templates of documents. Adding the disclosure of Mahoney provides the benefit of identifying documents (or regions thereof) with layout models.

In regard to dependent Claims 61, and 64, Claims 61, and 64 merely recite a
system for executing the method of Claims 16, and 20, respectively. Thus, the
combination of <u>Yanikoglu</u> in view of <u>Huang</u>, <u>Rangarajan</u>, and <u>Mahoney</u> discloses
every limitation of Claims 61, and 64 as indicated in the above rejections for Claims
16, and 20.

16.   Claims 18-19, and 62-63 are rejected under 35 U.S.C. 103(a) as being
unpatentable over Yanikoglu in view of Huang, and in further view of Rangarajan, and in
further view of Mahoney, and in further view of Taylor et al. (hereinafter Taylor, U.S.
Patent No. 5,848,184 filed 06/30/1995, issued 12/08/1998).

In regard to dependent Claim 18, <u>Yanikoglu</u>, <u>Huang</u>, <u>Rangarajan</u>, and <u>Mahoney</u>
fail to expressly disclose:

- *verifying the user-specified region location and boundaries conform to at least
  one region management model comprises*
    - *determining whether the user-specified region boundaries overlap with
      another region.*

However, <u>Taylor</u> discloses *determining whether the user-specified region
boundaries overlap (or cross) with another region* (Col. 7, lines 36-63 →
detection of overlapping boundaries as well as bounding boxes, which cross one
another).

It would have been obvious to one of ordinary skill in the art at the time of
invention to combine the disclosures of <u>Yanikoglu</u>, <u>Huang</u>, <u>Rangarajan</u>,

Mahoney, and Taylor as all of these inventions relate to the analysis of document images. Adding the disclosure of Taylor provides the benefit of detecting overlapping/crossing boundary boxes.

In regard to dependent Claim 19, Yanikoglu, Huang, Rangarajan, and Mahoney fail to expressly disclose:

- *verifying the user-specified region location and boundaries conform to at least one region management model comprises*
  - ○ *determining whether the user-specified region boundaries cross one another.*

However, Taylor discloses *determining whether the user-specified region boundaries cross one another* (Col. 7, lines 36-63 → detection of overlapping boundaries as well as bounding boxes, which cross one another).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Huang, Rangarajan, Mahoney, and Taylor as all of these inventions relate to the analysis of document images. Adding the disclosure of Taylor provides the benefit of detecting overlapping/crossing boundary boxes.

In regard to dependent Claims 62, and 63, Claims 62, and 63 merely recite a system for executing the method of Claims 18, and 19, respectively. Thus, the combination of Yanikoglu in view of Huang, Rangarajan, Mahoney, and Taylor

discloses every limitation of Claims 61, and 64 as indicated in the above rejections

for Claims 18, and 19.

17.   Claims 21, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yanikoglu in view of Huang, and in further view of Rangarajan, and in further view

of Mahoney, and in further view of Ahlstrom et al. (hereinafter Ahlstrom, U.S. Patent No.

6,594,030 filed 08/27/1999, issued 07/15/2003).

In regard to dependent Claim 21, Yanikoglu, Huang, Rangarajan, and Mahoney

fail to expressly disclose:

* *determining whether the user-specified region comply with a predetermined*
  multiple z-order specification.

However, Ahlstrom discloses *determining whether the user-specified region*

comply with a predetermined multiple z-order specification (Col. 6, lines 23-56 → z-

order as it relates to how pages are overlapped upon one another).

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu, Huang, Rangarajan, Mahoney,

and Ahlstrom as all of these inventions relate to analysis of page objects. Adding the

disclosure of Ahlstrom provides the benefit of checking z-ordering of pages.

In regard to dependent Claim 65, Claim 65 merely recites a system for executing

the method of Claim 21. Thus, the combination of Yanikoglu in view of Huang,

Rangarajan, Mahoney, and Ahlstrom discloses every limitation of Claim 65, as

indicated in the above rejection for Claim 21.

18.   Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Yanikoglu in view of Rom (U.S. Patent No. 7,054,509 filed 03/13/2001, issued

05/30/2006).

In regard to independent Claim 22, Yanikoglu discloses:

- *determining a definition of at least one region in the image, the region definition*

  having a location specification and a type specification (Pg. 1194, Sec. 3.2 →

  allows a user to view a document image and draw zones of various types around

  the different page regions, using simple mouse clicks, thereby defining regions in

  the image; after drawing the zone, one can label it with its type, subtype, parent

  zone, attached zones, and any number of attributes; Fig. 1 discloses position and

  type specifications associated with the zones and the image as a whole in the

  output RDIFF file).

- *generating an image layout definition comprising the region definition* (Pg. 1195,

  Sec. 3.2 → image layout definition is created in RDIFF format).

Yanikoglu fails to disclose:

- *searching for an image layout definition template that best matches the*

  generated image layout definition; and

- *conforming the generated image layout definition to the best-matched image*

  layout definition template.

However, Rom discloses *searching for an image layout definition template that best matches the generated image layout definition and conforming the generated image layout definition to the best-matched image layout definition template* (at least Col. 4, lines 15-67 → a scanner is used to scan an input form thereby creating a scanned image. A forms processing system then analyzes the scanned form and establishes a "model" of the form based on the distribution or layout of form fields (i.e., a *layout definition*). This "model" of the scanned form is then compared to stored templates of a plurality of forms to identify a form template "best fitting" that of the scanned form "model". Once the form has been identified, interpretation of the fields specific to a particular form and further processing of the data can resume (i.e., conforming the scanned input field data to the identified template)).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu and Rom since both inventions are related to the analysis of digitized (scanned) content forming images. Adding the disclosure of Rom provides the benefit of locating candidate templates that either match or are close to the image in question by comparing a layout extracted from the input image to the layout of a set of templates to find a match or near match.

In regard to dependent Claim 23, Yanikoglu discloses:

- *displaying the image on a display* (see Pg. 1196, Fig. 3 → screen snapshot of GroundsKeeper with image with drawn zones. Each zone is given a unique identifying number, displayed on the screen).

In regard to dependent Claim 24, Yanikoglu discloses:

- *displaying the boundaries of the at least one defined region according to its type specification* (Pg. 1194-1195, Sec. 3.2 → after drawing a zone, one can label it with its type, subtype, parent zone, attached zones, and any number of · attributes. Also see screen snapshot in Pg. 1196, Fig. 3).

19.   Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Huang.

In regard to dependent Claim 46, Yanikoglu and Rom fail to disclose:

- *receiving a definition of a visible area in the image, the visible area definition having a specification of margins around the image*

However, Huang discloses *receiving a definition of a visible area in the image, the visible area definition having a specification of margins around the image* (at least Pg. 1, Paragraph [0017] → allows the user to define a region or regions on a preview image produced by a scanner. This region or regions are then subsequently scanned to produce a final image or images). It is further noted that such a feature was well known to those of ordinary skill in the art at the time of invention since practically every scanning software contains in its user interface a means to choose a scanning area.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Huang since all three

inventions are related to the scanning or digitizing of documents. Adding the disclosure of <u>Huang</u> provides the benefit of saving time since one need not always scan the entire page to capture only certain portions.

<u>Yanikoglu</u> discloses:

- *generating an image layout definition comprising the region definition and the visible area definition* (Pg. 1195, Sec. 3.2 → image layout definition is created in RDIFF format).

20.   Claims 25, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Revankar.

In regard to dependent Claim 25, <u>Yanikoglu</u> fails to disclose:

- *determining a definition of at least one region in the image comprises a modality specification.*

However, <u>Revankar</u> discloses *determining a definition of at least one region in an image comprises a modality specification* (Abstract → image segmentation according to classes of regions that may be rendered according to the same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes (i.e., *modalities*)).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Revankar as all three inventions relate to image analysis. Adding the disclosure of Revankar provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

It is noted that Yanikoglu may disclose this limitation (Pg. 1196, Fig. 3 → suggests that zones are characterized by modality (Box at bottom of screen dump shows Zone6 with adjacent label as Halftone). Also, Yanikoglu discusses the prior art (Pg. 1191) and suggests that also describing a modality for a zone was performed. However, there does not appear to be enough of a description of GroundsKeeper in Yanikoglu to determine this.

In regard to dependent Claim 32, Yanikoglu fails to disclose:

- *determining a definition of a visible area in the image comprises*
    - *receiving a user input indicative of a first vertex and a location of a second vertex opposite the first vertex of the visible area on the image.*

However, Revankar discloses *receiving a user input indicative of a first vertex and a location of a second vertex opposite the first vertex of the visible area on the image* (Abstract → image segmentation according to classes of regions that may be rendered according to the same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output

images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Revankar as all three inventions relate to image analysis including segmentation. Adding the disclosure of Revankar provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

21.   Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Hall, and in further view of Sakai.

In regard to dependent Claim 26, Yanikoglu, and Rom fail to disclose:

- *wherein determining a definition of at least one region in the image comprises*
    - *automatically determining the definition of the at least one region in the image by segmentation and classification analyses of the image.*

However, Hall discloses *automatically determining the definition of the at least one region in the image by segmentation analysis of the image* (see Fig. 4 → represents a display of a document for which automatic segmentation has been performed).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Hall as all three inventions are related to image segmentation and layout analysis. Adding the

disclosure of <u>Hall</u> provides the benefit of an initial guess as to how the image should be segmented.

Yanikoglu, <u>Rom</u>, and <u>Hall</u> fail to disclose:

o *automatically determining the definition of the at least one region in the image by classification analysis of the image*

However, <u>Sakai</u> discloses *automatically determining the definition of the at least one region in the image by classification analysis of the image* (Figs. 10A-C → depict progressive classification of image regions based on type).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, <u>Hall</u>, and <u>Sakai</u> as all of these inventions relate to document image analysis. Adding the disclosure of <u>Sakai</u> provides the benefit of partitioning an image based on types of content identified in the image

22.   Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Ohta.

In regard to dependent Claim 27, <u>Yanikoglu</u> fails to expressly disclose:

• *determining a definition of at least one region in the image comprises:*

    o *receiving a user input indicative of a point on the image; and*

    o *defining a region encompassing the point using segmentation and classification analyses of the image.*

However, Ohta discloses *receiving a user input indicative of a point on the image; and defining a region encompassing the point using segmentation and classification analyses of the image* (Col. 7, line 46 through Col. 8, line 2 → scanning a documents, rendering it to a touch display, and allowing the user to manually select a region or regions to further process; the drawing of a box is done automatically based on the user input).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Ohta as all three inventions relate to document analysis. Adding the disclosure of Ohta provides the user with a means to easily designate zones without the need to manually draw on the screen.

23.   Claims 28, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Ranqarajan.

In regard to dependent Claim 28, Yanikoglu fails to expressly disclose:

- *determining a definition of at least one region in the image comprises:*
    - *receiving a user input indicative of boundaries of the region on the image; and*
    - *receiving a user input indicative of region type and region modality specifications.*

However, Ranqarajan discloses *receiving a user input indicative of boundaries of the region on the image; and receiving a user input indicative of region type and*

region modality specifications (Col. 9, lines 15-27; Figs. 7A-B → a conventional set of drawing-like tools with which the user can graphically create the user defined zones. This is done by choosing an appropriate drawing tool, such as a rectangle or polygon creation tool, and applying it to the de-skewed image to select the individual areas or zones containing the desired text information. Fig. 7a illustrates one example of a suitable user interface 705, showing a de-skewed document 700. Fig. 7b illustrates the same document now including a number of user-defined zones 701. A palette of drawing tools 703 is also shown, with various graphical tools for selecting the user-defined zones 701. Once the user defines a number of zones, the coordinates of the boundary of each of user defined zone is stored, preferably using the coordinates of an upper left hand corner, and a lower right hand corner where the user defined zone is a rectangle. For general polygonal user defined zones, the coordinates of each vertex may also be stored).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Rangarajan as all three inventions relate to document image analysis. Adding the disclosure of Rangarajan provides the benefit of manually defining image zones.

In regard to dependent Claim 36, Yanikoglu fails to disclose:

- *determining definition of at least one region comprises*

    o *receiving a user specification of a location and boundaries of a region in the image.*

However, <u>Rangarajan</u> discloses *receiving a user specification of a location and boundaries of a region in the image* (Col. 9, lines 15-37 → inputting polygons) input of vertices to define an image region).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, and <u>Rangarajan</u> as all three inventions relate to document image analysis. Adding the disclosure of <u>Rangarajan</u> provides the benefit of manually defining image regions.

24.   Claims 29-31, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Rangarajan, and in further view of Revankar.

In regard to dependent Claim 29, <u>Yanikoglu</u> and <u>Rom</u> fail to disclose:

- *determining a definition of at least one region in the image comprises:*

  o *receiving a user input indicative of vertices of the region on the image.*

However, <u>Rangarajan</u> discloses *receiving a user input indicative of vertices of the region on the image* (Col. 9, lines 15-37 → input of vertices to define an image region).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, and <u>Rangarajan</u> as all three inventions relate to document image analysis. Adding the disclosure of <u>Rangarajan</u> provides the benefit of manually defining image regions.

<u>Yanikoglu</u>, <u>Rom</u>, and <u>Rangarajan</u> fail to expressly disclose:

o *receiving a user input indicative of region type and region modality*

specifications.

However, Revankar discloses *receiving a user input indicative of region type and*

region modality specifications (Abstract → image segmentation according to classes

of regions that may be rendered according to the same imaging techniques. Image

regions may be rendered according to a three-class system (such as traditional text,

graphic and picture systems), or according to more than three image classes. In

addition, only two image classes may be required to render high quality draft or final

output images. The image characteristics that may be rendered differently from class

to class may include half toning, colorization and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu, Rom, Rangarajan, and Revankar

as all of these inventions relate to image analysis. Adding the disclosure of

Revankar provides the benefit of recognizing region types by class and by modality

(color, bit depth, etc.).

In regard to dependent Claim 30, Yanikoglu and Rom fail to disclose:

• *a definition of at least one region in the image comprises:*

o *receiving a user input indicative of vertices of a polygonal region on the*

image.

However, Rangarajan discloses *receiving a user input indicative of vertices of a polygonal region on the image* (Col. 9, lines 15-37→ input of vertices to define an image region).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Rangarajan as all three inventions relate to document image analysis. Adding the disclosure of Rangarajan provides the benefit of manually defining image regions.

Yanikoglu, Rom, and Rangarajan fail to disclose:

- *receiving a user input indicative of region type and region modality specifications of the polygonal region.*

However, Revankar discloses *receiving a user input indicative of region type and region modality specifications of the polygonal region* (Abstract → image segmentation according to classes of regions that may be rendered according to the same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosure of Yanikoglu, Rom, Rangarajan, and Revankar as all of these inventions relate to image analysis. Adding the disclosure of

Revankar provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

In regard to dependent Claim 31, Yanikoglu and Rom fail to disclose:

- *determining a definition of at least one region in the image comprises:*
  - o *receiving a user input indicative of a first vertex and a location of a second vertex opposite the first vertex of a rectangular region on the image; and*
  - o *receiving a user input indicative of region type and region modality specifications of the rectangular region.*

However, Rangarajan discloses *receiving a user input indicative of a first vertex and a location of a second vertex opposite the first vertex of a rectangular region on the image* (Col. 9, lines 15-37 → input of vertices to define an image region).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Rangarajan as all three inventions relate to document image analysis. Adding the disclosure of Rangarajan provides the benefit of manually defining image regions.

Yanikoglu, Rom, and Rangarajan fail to disclose:

- *receiving a user input indicative of region type and region modality specifications of the rectangular region.*

However, Revankar discloses *receiving a user input indicative of region type and region modality specifications of the rectangular region* (Abstract → image segmentation according to classes of regions that may be rendered according to the

same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently from class to class may include half toning, colorization and other image attributes).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, Rangarajan, and Revankar as all of these inventions relate to image segmentation. Adding the disclosure of Revankar provides the benefit of recognizing region types by class and by modality (color, bit depth, etc.).

In regard to dependent Claim 38, Yanikoglu fails to expressly disclose:

- *determining definition of at least one region comprises receiving user specification of region type and region modality.*

However, Revankar discloses *receiving user specification of region type and region modality* (Abstract → image segmentation according to classes of regions that may be rendered according to the same imaging techniques. Image regions may be rendered according to a three-class system (such as traditional text, graphic and picture systems), or according to more than three image classes. In addition, only two image classes may be required to render high quality draft or final output images. The image characteristics that may be rendered differently

from class to class may include half toning, colorization and other image
attributes).

It would have been obvious to one of ordinary skill in the art at the time of
invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, <u>Rangarajan</u>, and
<u>Revankar</u> as all of these inventions relate to image analysis. Adding the
disclosure of <u>Revankar</u> provides the benefit of recognizing region types by class
and by modality (color, bit depth, etc.).

25.   Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Yanikoglu in view of Rom, and in further view of Fredlund.

In regard to dependent Claim 33, <u>Yanikoglu</u> and <u>Rom</u> fail to explicitly disclose:

- *displaying the image on a display comprises:*

    o *receiving a user specification of a file size of the image;*

    o *determining a bit depth of the image;*

    o *determining dimensions of the image;*

    o *determining a display resolution in response to the file size, bit depth, and
       image dimensions; and*

    o *displaying the image on a display according to the display resolution.*

However, <u>Fredlund</u> discloses *displaying the image on a display comprises:
receiving a user specification of a file size of the image; determining a bit depth of
the image; determining dimensions of the image; determining a display resolution in
response to the file size, bit depth, and image dimensions; and displaying the image*

on a display according to the determined display resolution (Pg. 2, Paragraphs

[0025, 0029], Pg. 4, Paragraphs [0042-0044] → a system wherein a user determines

(specifies) the file size of an image required to produce a high quality image

reproduction on a selected image-bearing product. The user indirectly does this by

selecting a desired image-bearing product. The system then instructs the user's

system to prepare the original image so that it is optimal for the chosen image-

bearing product (i.e., it provides file size requirements). Based on this information,

the image is adjusted in size and in bit depth to produce an optimal image in terms

of size and resolution. The user's system then *transmits* that converted image to the

server to create the chosen image-bearing product. The image-bearing products are

typically hardcopy prints. The final product preview is displayed to the user (see

[0042])).

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu, Rom, and Fredlund as all three

inventions are related to the manipulation of digital images. Adding the disclosure of

Fredlund provides the benefit of optimizing an image according to user-provided

inputs based on a display requirement.

In regard to dependent Claim 34, Yanikoglu and Rom fail to explicitly disclose:

- *receiving a user specification of a file size of the image;*

- *determining a bit depth of the image;*

- *determining dimensions of the image;*

- *determining a display resolution in response to the file size, bit depth, and image dimensions; and*

- *transmitting the image having a resolution according to the determined display resolution.*

However, Fredlund discloses *receiving a user specification of a file size of the image; determining a bit depth of the image; determining dimensions of the image; determining a display resolution in response to the file size, bit depth, and image dimensions; and transmitting the image having a resolution according to the determined display resolution* (Pg. 2, Paragraphs [0025, 0029], Pg. 4, Paragraphs [0042-0044] → a system wherein a user determines (specifies) the file size of an image required to produce a high quality image reproduction on a selected image-bearing product. The user indirectly does this by selecting a desired image-bearing product. The system then instructs the user's system to prepare the original image so that it is optimal for the chosen image-bearing product (i.e., it provides file size requirements). Based on this information, the image is adjusted in size and in bit depth to produce an optimal image in terms of size and resolution. The user's system then *transmits* that converted image to the server to create the chosen image-bearing product. The image-bearing products are typically hardcopy prints. The final product preview is displayed to the user (see [0042])).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Fredlund as all three inventions are related to the manipulation of digital images. Adding the disclosure of

Fredlund provides the benefit of optimizing an image according to user-provided

inputs based on a display requirement.

26.   Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Yanikoglu in view of Rom, and in further view of Candy Wong.

In regard to dependent Claim 35, Yanikoglu and Rom fail to explicitly disclose:

- *displaying the image on a display comprises:*

    o *determining a display resolution setting of a display screen;*

    o *determining amount of display screen space available to display the*

      image;

    o *determining dimensions of the image;*

    o *determining a resolution for simultaneously displaying the entire image on*

      the display screen in response to the display resolution setting, the

      amount of display screen space available, and the dimensions of the

      image; and

    o *displaying the image on the display screen in response to the determined*

      resolution.

    However, Candy Wong discloses *determining a display resolution setting of a*

display screen; determining amount of display screen space available to display

the image; determining dimensions of the image; determining a resolution for

simultaneously displaying the entire image on the display screen in response to

the display resolution setting, the amount of display screen space available, and

the dimensions of the image; and displaying the image on the display screen in response to the determined resolution (Abstract, Pg. 3, Paragraph [0041] → discloses a scaleable GUI system that adjusts itself (GUI components and presumably content acted upon by the GUI such as an image) to fit within a given display screen (size, resolution, etc.) according to the settings/capabilities of the display.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Candy Wong as all three inventions are related to the manipulation of digital content. Adding the disclosure of Candy Wong provides the benefit of an adjustable user interface that adjusts itself (dimensionally, bit depth; resolution), and content manipulated therein based on a given screen or display's settings/capabilities.

27.   Claims 37, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Rangarajan, and in further view of Mahoney.

In regard to dependent Claim 37, Yanikoglu fails to expressly disclose:

- *definition of at least one region comprises verifying the user-specified region location and boundaries conform to at least one region management model.* However, Mahoney discloses *verifying the user-specified region location and boundaries conform to at least one region management model* (Col. 20, lines 45-63 → searching and identifying documents based on their makeup (structure, content,

etc.). Their system performs structural analysis at two levels. At the lower level, specific layout formats of a document can be identified (e.g., the recipient field of a letter or the header field of a memo). Such identification is performed herein using features. At the higher level, the entire configuration of an input document is captured using genre models. For example, a "business letter" is a genre model of a document that can be defined in most instances by a letter-date feature, a letter-recipient feature, a letter-cc feature, and a letter-signature feature (as shown in Fig. 3). Although some models may have some features in common, such models may still be distinguishable from each other by either the presence or absence of other features. For example, a memo and a letter may have similar letter-signature features while each may have different document header features (e.g., four-memo mark and letter-recipient)).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, <u>Rangarajan</u>, and <u>Mahoney</u> as all of these inventions relate to comparing document images to models or templates of documents. Adding the disclosure of <u>Mahoney</u> provides the benefit of identifying documents (or regions thereof) with layout models.

In regard to dependent Claim 41, <u>Yanikoglu</u> fails to disclose:

- *verifying the user-specified region location and boundaries conform to at least one region management model comprises*

    o *determining whether the user-specified region boundaries fall within the*

       visible area.

However, <u>Mahoney</u> discloses *determining whether the user-specified region boundaries fall within the visible area* (Col. 20, lines 45-62 → searching and identifying documents based on their makeup (structure, content, etc.). Their system performs structural analysis at two levels. At the lower level, specific layout formats of a document can be identified (e.g., the recipient field of a letter or the header field of a memo). Such identification is performed herein using features. At the higher level, the entire configuration of an input document is captured using genre models. For example, a "business letter" is a genre model of a document that can be defined in most instances by a letter-date feature, a letter-recipient feature, a letter-cc feature, and a letter-signature feature (as shown in Fig. 3). Although some models may have some features in common, such models may still be distinguishable from each other by either the presence or absence of other features. For example, a memo and a letter may have similar letter-signature features while each may have different document header features (e.g., four-memo mark and letter-recipient)).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, <u>Rangarajan</u>, and <u>Mahoney</u> as all of these inventions relate to comparing document images to models or templates of documents. Adding the disclosure of <u>Mahoney</u> provides the benefit of identifying documents (or regions thereof) with layout models.

28.   Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Yanikoglu in view of Rom, and in further view of Taylor.

In regard to dependent Claim 39, Yanikoglu, and Rom fail to expressly disclose:

- *verifying the user-specified region location and boundaries conform to at least*

    one region management model comprises

    o *determining whether the user-specified region boundaries overlap with*

        another region.

However, Taylor discloses *determining whether the user-specified region*

boundaries overlap (or cross) with another region (Col. 7, lines 36-63 →

detection of overlapping boundaries as well as bounding boxes, which cross one

another).

It would have been obvious to one of ordinary skill in the art at the time of

invention to combine the disclosures of Yanikoglu, Rom, and Taylor as all of

these inventions relate to the analysis of document images. Adding the

disclosure of Taylor provides the benefit of detecting overlapping/crossing

boundary boxes.

29.   Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Yanikoglu in view of Rom, and in further view of Rangarajan, and in further view of

Mahoney, and in further view of Taylor.

In regard to dependent Claim 40, Yanikoglu, Rom, Rangarajan, and Mahoney fail

to expressly disclose:

- *verifying the user-specified region location and boundaries conform to at least one region management model comprises*

    o *determining whether the user-specified region boundaries cross one another.*

    However, <u>Taylor</u> discloses *determining whether the user-specified region boundaries cross one another* (Col. 7, lines 36-63 → detection of overlapping boundaries as well as bounding boxes, which cross one another).

    It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, <u>Rangarajan</u>, <u>Mahoney</u>, and <u>Taylor</u> as all of these inventions relate to the analysis of document images. Adding the disclosure of <u>Taylor</u> provides the benefit of detecting overlapping/crossing boundary boxes.

30.   Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Rangarajan, and in further view of Mahoney, and in further view of Ahlstrom.

In regard to dependent Claim 42, <u>Yanikoglu</u>, <u>Rom</u>, <u>Rangarajan</u>, and <u>Mahoney</u> fail to disclose:

- *verifying the user-specified region location and boundaries conform to at least one region management model comprises determining whether the user-specified region comply with a predetermined multiple z-order specification.*

However, Ahlstrom discloses *determining whether the user-specified region comply with a predetermined multiple z-order specification* (Col. 6, lines 23-56 → z-order as it relates to how pages are overlapped upon one another).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, Rangarajan, Mahoney, and Ahlstrom as all of these inventions relate to analysis of page objects. Adding the disclosure of Ahlstrom provides the benefit of checking z-ordering of pages.

31.   Claims 43-45, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanikoglu in view of Rom, and in further view of Mahoney.

In regard to dependent Claim 43, Yanikoglu and Rom fail to expressly disclose:

- *wherein conforming the generated image layout definition to the best-matched image layout template comprises:*
    - *adjusting the location specification of the at least one region of the image layout definition.*

However Mahoney discloses *adjusting the location specification of the at least one region of the image layout definition* (Abstract → a document search system provides a user with a programming interface for dynamically specifying features of documents recorded in a corpus of documents). Mahoney provides a user interface which allows for the definition or adjustment of a given documents' parameters in order to search a corpus of documents looking for similarities.

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use the user interface of <u>Mahoney</u> to make adjustments in the model of a current document to make identification of all or a part of similar documents more likely.

It also would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, and <u>Mahoney</u> as all three inventions relate to comparing document images to models or templates of documents. Adding the disclosure of <u>Mahoney</u> provides the benefit of identifying documents (or regions thereof) with layout models.

In regard to dependent Claim 44, <u>Yanikoglu</u> and <u>Rom</u> fail to expressly disclose:

- *wherein conforming the generated image layout definition to the best-matched image layout template comprises:*
    - o *adjusting the type specification of the at least one region of the image layout definition.*

However <u>Mahoney</u> discloses *adjusting the type specification of the at least one region of the image layout definition* (Abstract → a document search system provides a user with a programming interface for dynamically specifying features of documents recorded in a corpus of documents). <u>Mahoney</u> provides a user interface which allows for the definition or adjustment of a given documents' parameters in order to define or refine a search of a corpus of documents looking for similarities.

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use the user interface of Mahoney to make adjustments in the model of a current document to make identification of all or a part of similar documents more likely.

It also would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Mahoney as all three inventions relate to comparing document images to models or templates of documents. Adding the disclosure of Mahoney provides the benefit of identifying documents (or regions thereof) with layout models.

In regard to dependent Claim 45, Yanikoglu and Rom fail to expressly disclose:

- *conforming the generated image layout definition to the best-matched image layout definition template comprises*

    o *adjusting the modality specification of the at least one region of the image layout definition.*

However Mahoney discloses *adjusting the modality specification of the at least one region of the image layout definition* (Abstract → a document search system provides a user with a programming interface for dynamically specifying features of documents recorded in a corpus of documents). Mahoney provides a user interface which allows for the definition or adjustment of a given documents' parameters in order to define or refine a search of a corpus of documents looking for similarities.

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use the user interface of <u>Mahoney</u> to make adjustments in the model of a current document to make identification of all or a part of similar documents more likely.

It also would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of <u>Yanikoglu</u>, <u>Rom</u>, and <u>Mahoney</u> as all three inventions relate to comparing document images to models or templates of documents. Adding the disclosure of <u>Mahoney</u> provides the benefit of identifying documents (or regions thereof) with layout models.

In regard to dependent Claim 47, <u>Yanikoglu</u> fails to expressly disclose:

- *conforming the generated image layout definition to the best-matched image layout definition template comprises*
    - *adjusting the visible area definition of the image layout definition.*

However <u>Mahoney</u> discloses *adjusting the visible area definition of the image layout definition* (Abstract → a document search system provides a user with a programming interface for dynamically specifying features of documents recorded in a corpus of documents). <u>Mahoney</u> provides a user interface which allows for the definition or adjustment ("tweaking") of a given documents' parameters in order to refine the search of a corpus of documents looking for similarities.

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use the user interface of <u>Mahoney</u> to make adjustments in the model of

a current document to make identification of all or a part of similar documents more likely.

It also would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosures of Yanikoglu, Rom, and Mahoney as all three inventions relate to comparing document images to models or templates of documents. Adding the disclosure of Mahoney provides the benefit of identifying documents (or regions thereof) with layout models.

Response to Arguments

32.   Applicants argue that the prior art of Yanikoglu fails to disclose all of the limitations recited in exemplary claim 1 (arguments also apply to Claim 48). In particular those of, *"receiving a definition of at least one region in an image, the region definition having a location specification and a type specification"* and *"receiving a user-specified definition of a visible area in the image, the visible area definition having a specification of margins around the image."*

33.   In regard to the rejection of the first limitation, the Examiner respectfully disagrees that Yanikoglu fails to disclose, *"receiving a definition of at least one region in an image, the region definition having a location specification and a type specification."*

34.   Yanikoglu, using their "Groundskeeper" tool clearly allows a user to provide to the system (the system *receiving*) *region definitions having a location specification and a type specification* (Pg. 1194, Sec. 3.2, as described in the previous rejection).

Furthermore, Applicants Specification allows such region definitions to either be automatically determined by the system or manually defined by the user (Pg. 4, Paragraph [0020]). Yanikoglu allows the user to manually define the regions (zones) by drawing rectangles, polygons about the regions. Yanikoglu also allows the user to define or characterize the region by type (Pg. 1194, Sec. 3.2). The Examiner maintains the rejection of the first of these limitations.

35.   With regard to the second limitation, *"receiving a user-specified definition of a visible area in the image, the visible area definition having a specification of margins around the image"*, a user defines a perimeter inside of which either the manual or automatic segmenting or zoning can take place. By default, according to the Specification, the whole image is selected, or the user can select a smaller area as long as the selection does not violate any system-level criteria (Pg. 7, Paragraph [0027]).

36.   The Examiner essentially agrees with the Applicant's argument that the manual defining of zones in the image is not the same as manually defining a perimeter ("visible area") inside of which zones can be automatically, or manually defined. Yanikoglu appears to, at most, assume that the visible area is the whole image and sets this automatically as evidenced by Fig. 1 where the sample RDIFF file's first 7 lines appears to define the whole page. The Examiner withdraws the rejection of this limitation as being anticipated by Yanikoglu.

37.   It is noted that the ordering of these two limitation steps in claim 1 would perhaps be less awkward if they were reversed. For example, one would expect that a user

would first define a region to operate on, and then operate on that region only. Ordering the limitations in this way would seem to require fewer steps since, as currently recited, a user may define all of the zones, then only select a subset of those zones to create the output. Reversing the step order would only have the user define the zones only in the previously defined perimeter, the perimeter likely being smaller than the entire document size.

The Examiner has added the prior art of <u>Huang</u> in combination with <u>Yanikoglu</u> to disclose the limitation of, *"receiving a user-specified definition of a visible area in the image, the visible area definition having a specification of margins around the image."*

38.   With respect to Independent Claim 22, Applicants argue that the prior art of <u>Yanikoglu</u> fails to anticipate the limitations of, *"determining a definition of at least one region in the image, the region definition having a location specification and a type specification," "generating an image layout definition comprising the region definition," "searching for an image layout definition template that best matches the generated image layout definition"* and *"conforming the generated image layout definition to the best-matched image layout definition template"* (emphasis added).

39.   With respect to the limitations of, *"determining a definition of at least one region in the image, the region definition having a location specification and a type specification," "generating an image layout definition comprising the region definition,"* the Examiner respectfully disagrees that Yanikoglu fails to disclose these and refers the Applicant to the reasons argued for Claim 1 above.

40.   With respect to the limitations of, *"searching for an image layout definition*

template that best matches the generated image layout definition" and *"conforming the*

generated image layout definition to the best-matched image layout definition template"

the Examiner would agree that <u>Yanikoglu</u> fails to disclose this. The Examiner withdraws

the previous anticipation rejection. The Examiner has added the prior art of <u>Rom</u> in

combination with <u>Yanikoglu</u> to disclose the limitations of Claim 22.

Conclusion

41.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to James H. Blackwell whose telephone number is 571-

272-4089. The examiner can normally be reached on 8-5 M-F.

42.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Doug Hutton can be reached on 571-272-4137. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

43.   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James H. Blackwell
10/10/2007

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